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TROPIC NETWORKS INC.
DR. VICTORIA DONNELLY
135 MICHAEL COWPLAND DRIVE
KANATA, ON K2M 2E9
CANADA

EXAMINER	
GANDHI, DIPAKKUMAR B	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 08/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/004,441	MAUNG ET AL.	
	Examiner	Art Unit	
	Dipakkumar Gandhi	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/26/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 7, 9-21, 24, 26-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Szymanski (US 2002/0053062 A1).

Szymanski anticipates claim 1.

Szymanski teaches a method for transmitting digital data in a form of packets through a transmission medium with error correction, each packet being formatted as a fixed number of data words, each data word having more than 1 bit, the method comprising the steps of: encoding a sent data packet to form a sent encoded data packet, including: applying an error detection scheme to the sent data packet to add a first error detection field to the packet to form a first Protected Packet; applying an error correction scheme to the first Protected Packet to add a first error correction field to said first Protected Packet to form the Sent Encoded Packet; transmitting the sent encoded data packet through the transmission medium, which may introduce errors into the packet during the transmission, the Sent Encoded Packet

being received as a Received Encoded Packet at the output of the transmission medium, the Received Encoded Packet including a second Protected Packet and a second error correction field, the second Protected Packet including a second data packet and a second detection field; and decoding the Received Encoded Packet to recover a copy of the sent data packet (page 2, paragraph 19, page 4, paragraph 33, 35, Szymanski).

- Szymanski anticipates claim 2.

Szymanski teaches a method, wherein the step of decoding comprises: correcting errors, if any, in the Received Encoded Packet to recover a third Protected Packet, the third Protected Packet having a third data packet and a third detection field, the third Protected Packet including fields from the second Packet being a copy of the first Protected Packet within the power of the correction scheme (page 4, paragraph 35, Szymanski).

- Szymanski anticipates claim 3.

Szymanski teaches a method, wherein the step of decoding further comprises: determining the integrity of the third Protected Packet; and if the integrity is confirmed, recovering a recovered data packet from the third Protected Packet, the recovered data packet being a copy of the sent data packet within the power of the correction and detection schemes (abstract, page 12, paragraph 158, Szymanski).

- Szymanski anticipates claim 4.

Szymanski teaches a method, wherein the step of correcting errors comprises correcting one or more errors occurred in a single data word of the Sent Encoded Packet only (page 8, paragraph 119, Szymanski).

- Szymanski anticipates claim 7.

Szymanski teaches a method, wherein the step of applying the error correction scheme to the first Protected Packet to add the first error correction field comprises applying an algebraic function to the data words in the first Protected Packet to generate the first error correction field (figure 34, 35, page 12, paragraph 163, 167, page 13, paragraph 173, page 19, paragraph 257, Szymanski).

- Szymanski anticipates claim 9.

Szymanski teaches a method, wherein the step of applying the algebraic function comprises performing a N-dimensional parity calculation (page 13, paragraph 173, Szymanski).

- Szymanski anticipates claim 10.

Szymanski teaches a method, wherein the step of applying N-dimensional parity calculation comprises performing a 3D (three dimensional) parity calculation (page 13, paragraph 173, Szymanski).

- Szymanski anticipates claim 11.

Szymanski teaches a method, wherein the step of applying the error detection scheme comprises applying an algebraic function to the data words in the sent data packet to generate the first detection field (page 12, paragraph 165, Szymanski).

- Szymanski anticipates claim 12.

Szymanski teaches a method, wherein the step of applying the algebraic function comprises applying one or more of the following functions: CRC-16, CRC-32 and a checksum (page 11-12, paragraph 157, 158, 159, Szymanski).

- Szymanski anticipates claim 13.

Szymanski teaches a method, wherein the step of determining the integrity comprises: applying said error detection scheme to the third data packet to generate a fourth detection field; comparing the third and fourth detection fields; confirming the integrity of the third Protected Packet, if the third and fourth detection fields are equal (page 12, paragraph 158, Szymanski).

- Szymanski anticipates claim 14.

Szymanski teaches a method, wherein the transmitting of data is performed so that each data word is an 8-bit byte, and each data packet has not more than 64 bytes (page 12, paragraph 159, 160, Szymanski).

- Szymanski anticipates claim 15.

Szymanski teaches a method, wherein transmitting of the sent encoded data packet through the transmission medium comprises transmitting said packet through the transmission link (abstract, Szymanski).

- Szymanski anticipates claim 16.

Szymanski teaches a method, wherein transmitting the sent encoded data packet through the transmission link comprises transmitting said packet through the link which provides line coding of the transmitted data (page 3, paragraph 28, page 9, 122, page 14, 195, Szymanski).

- Szymanski anticipates claim 17.

Szymanski teaches a method, wherein the transmitting the packet through the line coded link comprises transmitting the packet through the link, which provides 8B/10B line coding (page 9, 122, page 14, 195, Szymanski).

- Szymanski anticipates claim 18.

Szymanski teaches a system for transmitting digital data in a form of packets through a transmission medium with error correction, each packet being formatted as a fixed number of data words, each data word having more than 1 bit, the system comprising: means for encoding a sent data packet to form a sent encoded data packet, including: means for applying an error detection scheme to the sent data packet to add a first error detection field to the packet to form a first Protected Packet; means for applying an error correction scheme to the first Protected Packet to add a first error correction field to said first Protected Packet to form the Sent Encoded Packet; means for transmitting the sent encoded data packet through the transmission medium, which may introduce errors into the packet during the transmission, the Sent Encoded Packet being received as a Received Encoded Packet at the output of the transmission medium, the Received Encoded Packet including a second Protected Packet and a second error correction field, the second Protected Packet including a second data packet and a second detection field; and means for decoding the Received Encoded Packet to recover a copy of the sent data packet (page 2, paragraph 19, page 4, paragraph 33, 35, Szymanski).

- Szymanski anticipates claim 19.

Szymanski teaches a system, wherein the means for decoding comprises: means for correcting errors in the Received Encoded Packet to recover a third Protected Packet, the third Protected Packet having a third data packet and a third detection field, the third Protected Packet including fields from the second Protected Packet with the errors being corrected, the third Protected Packet being a copy of the first Protected Packet within the power of the correction scheme (page 4, paragraph 35, Szymanski).

- Szymanski anticipates claim 20.

Szymanski teaches a system, wherein the means for decoding further comprises: means for determining the integrity of the third Protected Packet; and means for recovering a recovered data packet from the third Protected Packet, the recovered data packet being a copy of the sent data packet within the power of the correction and detection schemes (abstract, page 12, paragraph 158, Szymanski).

- Szymanski anticipates claim 21.

Szymanski teaches a system, wherein the means for correcting errors comprises means for correcting one or more errors occurred in a single data word of the Sent Encoded Packet only (page 8, paragraph 119, Szymanski).

- Szymanski anticipates claim 24.

Szymanski teaches a system, wherein the means for applying the error correction scheme to the first Protected Packet to add the first error correction field comprises means for applying an algebraic function to the data words in the first Protected Packet to generate the first error correction field (figure 34, 35, page 12, paragraph 163, 167, page 13, paragraph 173, page 19, paragraph 257, Szymanski).

- Szymanski anticipates claim 26.

Szymanski teaches a system, wherein the means for applying the algebraic function comprises means for performing a N-dimensional parity calculation (page 13, paragraph 173, Szymanski).

- Szymanski anticipates claim 27.

Szymanski teaches a system, wherein the means for performing the N-dimensional parity calculation comprises means for performing a 3D (three dimensional) parity calculation (page 13, paragraph 173, Szymanski).

- Szymanski anticipates claim 28.

Szymanski teaches a system, wherein the means for applying the error detection scheme comprises means for applying an algebraic function to the data words in the sent data packet to generate the first detection field (page 12, paragraph 165, Szymanski).

- Szymanski anticipates claim 29.

Szymanski teaches a system, wherein the means for applying the algebraic function comprises means for applying one or more of the following functions: CRC-16, CRC-32 and a checksum (page 11-12, paragraph 157, 158, 159, Szymanski).

- Szymanski anticipates claim 30.

Szymanski teaches a system, wherein the means for determining the integrity comprises: means for applying said error detection scheme to the third data packet to generate a fourth detection field; means for comparing the third and fourth detection fields; and means for confirming the integrity of the third Protected Packet, if the third and fourth detection fields are equal (page 12, paragraph 158, Szymanski).

- Szymanski anticipates claim 31.

Szymanski teaches a system; wherein each data word is an 8-bit byte, and each data packet has not more than 64 bytes (page 12, paragraph 159, 160, Szymanski).

- Szymanski anticipates claim 32.

Szymanski teaches a system, wherein the transmission medium comprises a transmission link (abstract, Szymanski).

- Szymanski anticipates claim 33.

Szymanski teaches a system as described in claim 32, wherein the transmission link comprises a line encoder for transforming each "p" bits of said sent encoded data packets into "q" bits, "q" being not less than "p", and a line decoder for transforming each of the received "q" bits into "p" bits of said received encoded data packets (page 3, paragraph 28, page 9, 122, page 14, 195, Szymanski).

- Szymanski anticipates claim 34.

Szymanski teaches a system, wherein "p"=8 and "q"=10 (page 9, 122, page 14, 195, Szymanski).

- Szymanski anticipates claim 35.

Szymanski teaches an encoder for a transmission system for transmitting digital data in a form of packets through a transmission medium with error correction, comprising: means for adding an error detection field to a sent data packet to form a Protected Packet; means for adding an error correction field to the Protected Packet to form an encoded packet; and means for sending the encoded packet to the transmission medium (page 4, paragraph 33, Szymanski).

- Szymanski anticipates claim 36.

Szymanski teaches an encoder, wherein the means for adding the error detection field comprises means for adding the error detection filed according to one the schemes: CRC-16, CRC-32 and checksum (page 11-12, paragraph 157, 158, 159, Szymanski).

- Szymanski anticipates claim 37.

Szymanski teaches an encoder, wherein the means for adding the error correction field comprises means for applying 3D parity calculation to the Protected Packet (page 13, paragraph 173, Szymanski).

- Szymanski anticipates claim 38.

Szymanski teaches a decoder for a transmission system for transmitting digital data in a form of packets through a transmission medium with error correction, the decoder receiving comprising: means for receiving a Received Encoded Packet from the transmission medium, the Received Encoded Packet being the encoded packet encoded by the encoder and transmitted through the transmission medium, the Received Encoded Packet including a Protected Packet and an error correction field; means for correcting errors, if any, in the Received Encoded Packet to recover a corrected Protected Packet which includes fields from the Protected Packet with the errors being corrected; means for determining integrity of the corrected Protected Packet; and means for recovering a corrected data packet from the corrected Protected Packet, the corrected data packet being a copy of the sent data packet (page 4, paragraph 35, page 12, paragraph 158, Szymanski).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 5-6, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szymanski (US 2002/0053062 A1) as applied to claim 3 above, and further in view of Anderson et al. (US 6,026,506).

As per claim 5, Szymanski substantially teach the claimed invention described in claim 3 (as rejected above).

However Szymanski does not explicitly teach the specific use of a method, wherein the step of decoding comprises generating a packet drop indicator signal if the power of the correction scheme is exceeded and the correction scheme cannot correct errors.

Anderson et al. in an analogous art teach that if the packet parser detects the Transport Error Indicator is set, or that the sync byte is missing and the sync drop is greater then 0, or that the TS Error Signal is active, the packet is discarded (col. 8, lines 23-26, Anderson et al.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Szymanski's patent with the teachings of Anderson et al. by including an additional step of using a method, wherein the step of decoding comprises generating a packet drop indicator signal if the power of the correction scheme is exceeded and the correction scheme cannot correct errors.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to remove the packets with errors that are received at the receiver.

- As per claim 6, Szymanski and Anderson et al. teach the additional limitations.

Anderson et al. teach a method, wherein the step of decoding comprises generating a packet drop indicator signal if the integrity is not confirmed (col. 8, lines 23-26, Anderson et al.).

- As per claim 22, Szymanski and Anderson et al. teach the additional limitations.

Anderson et al. teach a system, wherein the means for decoding comprises means for generating a packet drop indicator signal if the power of the correction scheme is exceeded and the correction scheme cannot correct errors (col. 8, lines 23-26, Anderson et al.).

- As per claim 23, Szymanski and Anderson et al. teach the additional limitations.

Anderson et al. teach a system, wherein the means for decoding comprises means for generating a packet drop indicator signal if the integrity of the third Protected Packet is not confirmed (col. 8, lines 23-26, Anderson et al.).

7. Claims 8, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szymanski (US 2002/0053062 A1) as applied to claim 2 above, and further in view of Garrabrant et al. (US 6,389,572 B1).

As per claim 8, Szymanski substantially teach the claimed invention described in claim 2 (as rejected above).

However Szymanski does not explicitly teach the specific use of a method, wherein the step of correcting comprises the following steps: applying an algebraic function to the data words in the second Protected Packet to generate a third error correction field; applying a bitwise exclusive OR function the second and third correction fields to obtain an error syndrome value; if an error occurred, identifying the data word which has the error and obtaining a bit pattern of the error from the error syndrome value; and correcting the identified word in the second Protected Packet by using the obtained bit pattern to obtain the third Protected Packet.

Garrabrant et al. in an analogous art teach that Forward Error Correction (FEC) is applied (col. 2, lines 41-42, Garrabrant et al.).

Garrabrant et al. teach that referring now to FIG. 6, a block diagram 600 is shown of the representative elements used to generate a likely representation of the bit error position. In block element 602 an FEC word is created from each row of the soft decision buffer elements by taking the sign bit of each entry and performing a shift operation to generate the FEC word. As shown in block 604, the FEC word (for this example) will consist of 12 bits, with 8 data bits and 4 parity bits. The FEC word 604 is then fed into a block element 606 for generating the syndrome, or in other words generating the likely bit error position in

the FEC word. Referring also to FIG. 7, a block diagram is shown of the representative elements used to generate the syndrome 606. The 8 data bits of the incoming FEC word 604 are fed into a look-up table 608 which produces a corresponding word 610 having 8 data bits and 4 parity bits. The 4 parity bits 612 from the FEC word 604 and the 4 parity bits from the resulting look-up table word 610 fed into an XOR (exclusive or) gate 614. The output of this XOR gate produces a syndrome 618, which gives an indication of what the possible error patterns might be in the FEC word. If the XOR result produces zeros, then no detectable/correctable errors have occurred. This 4 bit pattern (shown for example as 0001) might produce 16 different variations. However, since the FEC word is comprised of only 12 bits, then 2 of these syndromes might be used to indicate 2 bit error patterns (figure 6, col. 5, line 58 – col. 6, line 16, Garrabrant et al.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Szymanski's patent with the teachings of Garrabrant et al by including an additional step of using a method, wherein the step of correcting comprises the following steps: applying an algebraic function to the data words in the second Protected Packet to generate a third error correction field; applying a bitwise exclusive OR function the second and third correction fields to obtain an error syndrome value; if an error occurred, identifying the data word which has the error and obtaining a bit pattern of the error from the error syndrome value; and correcting the identified word in the second Protected Packet by using the obtained bit pattern to obtain the third Protected Packet.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to detect the errors in data words in the received packets and correct the errors to obtain the transmitted data packets.

- As per claim 25, Szymanski and Garrabrant et al. teach the additional limitations.

Garrabrant et al. teach a system, wherein the means for correcting comprises: means for applying an algebraic function to the data words in the second Protected Packet to generate a third error correction field; means for applying bitwise exclusive OR function to the second and third correction fields to obtain an error syndrome value; means for identifying the data word which has the error, if any, and means for

obtaining a bit pattern of the error from the error syndrome value; and means for correcting the identified word in the second Protected Packet by using the obtained bit pattern to obtain the third Protected Packet (figure 6, col. 2, lines 41-42, col. 5, line 58 – col. 6, line 16, Garrabrant et al.).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dipakkumar Gandhi whose telephone number is 703-305-7853. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dipakkumar Gandhi
Patent Examiner

Guy J. LAMARRE
PRIMARY EXAMINER